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Appl. No. 10/065,854
Docket No. 122432 CIP/GEM-0018-P

REMARKS / ARGUMENTS

Status of Claims

Claims 1-4, 6-22, 28-34, 37-48, 50, 51, 53, 55 and 58-60 are pending in the application and stand rejected. Applicant has canceled Claim 20, has amended Claims 1 and 59, and has added new Claim 61, leaving Claims 1-4, 6-19, 21, 22, 28-34, 37-48, 50, 51, 53, 55 and 58-61, for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a), have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Rejections Under 35 U.S.C. §112, Second Paragraph

Claim 59 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

The Examiner comments that Claim 40 (understood by Applicant to mean Claim 59) contradicts the specification.

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that where the specification provides general guidelines as to the scope of the invention such that one of ordinary skill in the art would know what was meant, the subject matter of the invention would have been described and supported in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicant believes the present specification and claims satisfy that burden.

While Applicant agrees that the subject claim language may not recite the exact language of the specification, Applicant respectfully disagrees that the claimed invention contradicts the specification. Notwithstanding this disagreement, however, Applicant has amended Claim 59 to more closely align the claim language with the language of the specification. No new matter has been added as antecedent support for the amendment

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may be found in the application as originally filed, such as at Paragraph [0054], for example.

In view of the foregoing, Applicant respectfully submits that the claimed subject matter is described in such a manner that reasonably conveys to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection, which Applicant considers to be traversed.

Rejections Under 35 U.S.C. §103(a)

Examiner's Paragraph 6: Claims 1-4, 6-8, 13-20, 29-32, 34, 42, 45, 53, 55, 58 and 60 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Giger et al. (U.S. Patent No. 6,205,348, hereinafter Giger) in view of Sones et al. (U.S. Patent No. 4,792,900, hereinafter Sones).

Examiner's Paragraph 7: Claims 9-12, 21, 22, 28, 33, 37-41, 43, 44, 46 and 59 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Giger in view of Sones and further in view of Nishikawa et al. (U.S. Patent No. 6,058,322, hereinafter Nishikawa).

Examiner's Paragraph 8: Claims 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikawa in view of Giger and Sones.

Applicant traverses these rejections for the following reasons.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest each and every element of the instant invention in such a manner as to perform as the claimed invention performs. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

Regarding Independent Claim 1, and Examiner's Paragraph 6

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Applicant has canceled Claim 20, and has amended Claim 1 to incorporate the limitations of Claim 20, such that Claim 1 now recites, inter alia:

“...employing a data source, the data source including a dual or multiple energy image set including a high energy image, a low energy image, a bone image, and a soft tissue image, each member of the image set being available for processing along with each other member of the image set, *each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once, as opposed to parallel operations, by incorporating features from all images of the image set;*

defining a region of interest within an image from the dual or multiple energy image set;

employing a feature extraction algorithm and extracting feature measures from the region of interest;

employing a feature selection algorithm on the region of interest to sort through candidate features of the region of interest, classifying a candidate region of interest on each image, *and subsequently combining results of all of the computer aided processing operations...*”

No new matter has been added as antecedent support can be found in the application as originally filed, such as at Paragraphs [0051], [0054] and [0063], at Figures 7 and 12, and at Claim 20, for example.

Dependent claims inherit all of the limitations of the parent claim.

The Examiner acknowledges that Giger does not disclose *each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once by incorporating features from all images of the image set*, and looks to Sones to cure this deficiency. Paper No. 20060609, pages 4-5.

However, in alleging that Sones cures the deficiency of Giger, the Examiner merely remarks that Sones discloses a high energy image, and low energy image, and that from these images a soft tissue image and a bone image are formed and stored in separate memories. From this disclosure, the Examiner then presents *a broad conclusory*

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statement, remarking that "Therefore, Sones teaches that all four images of the image set are available for computer aided processing." Applicant is at a loss to see how the "therefore" conclusion can be so broadly made.

In respectful disagreement with the Examiner, Applicant submits that such a broad conclusory statement does not state with any degree of specificity where Sones cures the deficiency of Giger with respect to *each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once, as opposed to parallel operations, by incorporating features from all images of the image set.*

In comparing Sones with the claimed invention, Applicant finds Sones to teach first and second convolver operations 44 and 46, and to teach a second pair of convolvers 54 and 56 that perform similar convolutions as convolvers 44 and 46, except with a different filter function. Col. 6, lines 34-38, and col. 7, lines 33-38. As such, Applicant finds Sones to teach a computer aided processing technique that is directed to performing distinctly different processes on the different images at different points in the process in a parallel processing operation, and to be absent a teaching of *each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once, as opposed to parallel operations, by incorporating features from all images of the image set.* Applicant respectfully submits that an arrangement such as Sones that uses multiple convolvers does not allow the computer aided processing to be performed once, as opposed to parallel operations, by incorporating features from all images of the image set.

The Examiner alleges that one skilled in the art would be motivated to modify Giger in view of Sones because it *may be desirable* to look back at the original unprocessed images; it would have been desired to have the image set available *in case the diagnostic procedures failed* or were ruled inaccurate; and the image set *could be used* again or by another diagnostic procedure to confirm the results of the initial diagnosis. Paper 20060609, page 5.

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Here, the Examiner uses possibilities and probabilities to allege obviousness, which Applicant submits falls wholly short of unambiguously establishing a prima facie case of obviousness against the claimed invention as a whole. The mere fact that a certain thing *may* result from a given set of circumstances *is not sufficient*. The Examiner must meet the burden of showing each and every element of the claimed invention arranged so as to perform as the claimed invention performs, otherwise, a prima facie case of obviousness cannot be established.

Accordingly, Applicant submits that Sones fails to cure the deficiencies of Giger, and therefore the combination of Giger and Sones fails to establish a prima facie case of obviousness.

In addition to the foregoing, Applicant has canceled Claim 20 and has amended Claim 1 to incorporate the limitations of 20. In rejecting Claim 20, the Examiner merely recites the language of Claim 20, and then applies official notice to allege obviousness of the claimed invention.

Applicant respectfully traverses this official notice since there is no teaching or suggestion of how or why one skilled in the art would be motivated to perform the claimed extraction, selection and classification operations on all images of the image set, and then combine the results of all of the computer aided detection and diagnosis processing operations. The Examiner simply alleges that it would be obvious to one skilled in the art to do what Applicant has done. However, Applicant submits that this allegation is contrary to the teaching of Giger, which is the sole reference applied against Claim 20, as the Examiner has already acknowledged that Giger is deficient in disclosing the image set being arranged to allow the computer aided processing to be performed once by incorporating features from all images of the image set. As such, Applicant is at a loss to see how it would now be obvious, based only on Giger and official notice, to simply combine the results of all of the computer aided processing operations. At column 8, line 65, through column 9, line 1, Applicant finds Giger to disclose the calculation of a weighted sum of two integrated values of low-energy and high-energy images that are separately subjected to ROI placement and integration, but finds no teaching whatsoever

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of combining results of all of the computer aided processing operations, which are claimed in the instant invention to include extraction, selection and classification operations.

Applicant respectfully submits that where an Official Notice is asserted and traversed, the Examiner should cite a reference in support of the assertion. MPEP §2144.03.

Yet further to the foregoing, while applicant submits that the language of Claim 1 that recites "each member of the image set being arranged at the data source in such a manner as to *allow the computer aided processing to be performed once* by incorporating features from all images of the image set", sufficiently describes the scope of the invention that allows for a "one-time" computer aided processing operation, as opposed to parallel type computer aided processing operations, Applicant has nonetheless, in a effort to advance this case to issue, further amended Claim 1 to more clearly claim this intent. Accordingly, Claim 1 now recites, inter alia, "...each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once, as opposed to parallel operations, by incorporating features from all images of the image set...".

No new matter has been added as antecedent support can be found in the application as originally filed, such as at Paragraph [0051], for example.

In view of the foregoing, Applicant submits that the claimed invention is patentably distinct over the prior art of record as the prior art describes the availability of image data to provide for parallel processing operations, and not to allow for a one-time operation, and therefore the prior art does not teach each and every element of the claimed invention arranged so as to perform as the claimed invention performs.

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Regarding Claim 19 More Specifically

The Examiner alleges obviousness by applying the rejection as applied to Claim 1 and further taking official notice that it would have been obvious to one of ordinary skill in the art to define regions of interest in each of the already obtained images and that the features would be incorporated in each image. Paper 20060609, page 9.

Applicant traverses this official notice for the following reasons.

Claim 19 recites "...from *all* regions of interest on *all* images." In alleging obviousness, the Examiner does not address the limitation of *all regions of interest on all images*, but merely remarks about regions of interest (not all regions of interest) in each image, and about features in each image (all regions of interest on all images). Applicant respectfully submits that the Examiner's paraphrasing of the claimed invention falls wholly short of including each and every limitation of the claimed invention arranged so as to perform as the claimed invention performs.

In view of the deficiency of the Examiner's Official Notice, Applicant respectfully submits that where an Official Notice is asserted and traversed, the Examiner should cite a reference in support of the assertion. MPEP §2144.03.

Regarding Claims 29-32, 34, 42, 45, 53, 55, 58 and 60, and

Examiner's Paragraph 6:

Independent Claims 28, 33, 34, 47, 53 and 55, each recite, inter alia:

"...each member of the image set being available for processing along with each other member of the image set, *each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once by incorporating features from all images of the image set...*"

Dependent claims inherit all of the limitations of the respective parent claim.

Applicant has set forth above arguments to establish that Giger and Sones are deficient in their teaching of *each member of the image set being arranged at the data source in such a manner as to allow the computer aided processing to be performed once by incorporating features from all images of the image set*. More specifically, the Examiner acknowledges the deficiency of Giger in this regard, and Applicant identifies

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above why Sones fails to cure this deficiency. To avoid repetition, Applicant herein incorporates the above noted arguments by reference.

For at least the reasons already set forth above with regard to Claim 1, Applicant submits that Giger and Sones fail to establish a prima facie case of obvious against the remaining independent claims, and therefore, claims depending therefrom are also non-obvious.

Regarding Claims 9-12, 21, 22, 28, 33, 37-41, 43, 44, 46 and 59, and
Examiner's Paragraph 7

The Examiner applies Nishikawa, to modify Giger in view of Sones, for its disclosure of an artificial neural network (ANN), and not for curing any of the aforementioned deficiencies in Giger and Sones noted by Applicant.

In view of the foregoing arguments relating to the deficiencies of Giger and Sones, Applicant submits that the subject claims are patentable at least for the reason that Nishikawa fails to cure the deficiencies of Giger and Sones.

Regarding Claims 47-51, and Examiner's Paragraph 8

The Examiner modifies Nishikawa in view of Giger and Sones, acknowledges that Nishikawa is deficient in disclosing the details of the image set from which the soft tissue image is selected, looks to Giger to cure a portion of this deficiency, acknowledges that Giger is deficient in disclosing the image set being arranged to allow a computer aided processing to be performed once by incorporating features from all images of the image set, and looks to Sones to cure this deficiency.

In view of the foregoing arguments relating to the deficiencies of Giger and Sones, Applicant submits that the subject claims are patentable at least for the reason that Giger and Sones fail to cure the deficiencies of Nishikawa.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to offer any reasonable

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expectation of success in combining the References to perform as the claimed invention performs, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

In light of the forgoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §112, second paragraph, and 35 U.S.C. §103(a), have been traversed, and respectfully requests that the Examiner reconsider and withdraw these rejections.

Regarding New Claim 61

Applicant has added new Claim 61 to capture previously disclosed but unclaimed subject matter. No new matter has been added as antecedent support can be found in the application as originally filed, such as at Paragraph [0051] and Figure 6, for example. For at least the reason that Claim 61 depends from Claim 1, Applicant submits that Claim 61 is allowable, and respectfully requests notice thereof.

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Respectfully submitted,

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